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SEP 12 2008
OFFICE OF ASSURED WATER SUPPLY

September 10, 2008

Director Herb Guenther
Arizona Department of Water Resources
3550 N. Central Avenue
Phoenix, Arizona 85012

Re: Draft Water Adequacy Rules following passage of S.B. 1575

Via Hand Delivery

Dear Director Guenther:

Coconino County appreciates the opportunity to participate in the administrative rulemaking process and provide comments to the Arizona Department of Water Resources (ADWR) on the proposed rules implementing the provisions of S.B.1575. We are also very grateful to ADWR for the time your staff has spent educating the elected officials and staff of the County on the requirements of the program.

Coconino County is not a water provider so our review and analysis of the proposed rule package comes from a different perspective. We are reviewing the draft rules from the perspective of how they may affect a broad range of interests in our county, including our residents, water system operators, and future developers. Our local subdivisions vary dramatically in how they obtain water--some are served by private water companies or utilities (including the Navajo Tribal Utility Authority), others rely on wells of varying depths, some over 3,000 feet in depth, others on hauled water, and one town receives water from Utah--so the matter of applying mandatory adequacy rules is not a straightforward issue in our diverse region. Also, because adoption of a mandatory adequacy ordinance by Coconino County would bind future developments in incorporated cities and towns within our boundaries, we are cognizant of the potential impacts in those communities as well.

Coconino County has long been a proponent of linking land development with water availability and obtaining the local authority to do so. Thus, we support the purpose and goals of S.B.1575. In revising the Adequacy Rules that apply outside of the state's Active Management Areas (AMAs), it would be highly desirable to have a program that would be similar to some aspects of an AMA, particularly providing for the development of regional groundwater management plans and a management authority to help oversee the implementation of the plans. While we realize that it would take additional legislation, an adequacy program that applies to all developments (not just subdivisions) including lot splits and commercial development (in addition to those commercial subdivisions that are covered by the program) would provide more effective management of our water resources.

In addition, we would like to see a water management program that takes into account the water needs of the environment in a manner consistent with Coconino County's Comprehensive Plan and the Coconino Plateau Water Advisory Council's Strategic Plan.

The comments attached to this letter are based on the Draft Adequacy Rules dated May 14, 2008, the Hydrologic Criteria Report dated May 9, 2008, and many discussions with ADWR staff at stakeholder meetings, in telephone conversations, and via email. We recognize that ADWR cannot adopt rules unsupported by statutory authorization, however, we believe that some additional amendments to the mandatory adequacy statutes would improve the program's effectiveness. Thus, we have included four statutory recommendations for your consideration.

Coconino County understands that it is impossible to develop a one-size-fits-all rule package, and acknowledges that ADWR has done a good job in attempting to address the unique water management issues of our region. We look forward to reviewing the final version of the Draft Adequacy Rules and the related Substantive Policy Statement before ADWR submits the Rules to the Governor's Regulatory Review Commission.

Sincerely,

Deborah Hill

Deborah Hill, Chair
Coconino County Board of Supervisors

Attachment

Cc: Janet Napolitano, Governor
Coconino County Board of Supervisors
Sandy Fabritz-Whitney, ADWR
Doug Dunham, ADWR
Cities and Towns Managers in Coconino County

Coconino County Comments on ADWR's Draft Adequacy Rules

I. Program Administration

1. Issue: The Draft Adequacy Rules do not expressly state that ADWR will take local conditions into consideration when reviewing a water adequacy application.

Recommendations: R12-15-703 and 713 should include specific language acknowledging the department's consideration of local conditions when reviewing an applicant's calculations of the 100-year water demand for a proposed subdivision. Further, we recommend that the rules specifically take into account, on a case-by-case basis, the installation of grey water and water harvesting systems similar to the provisions required for Assured Water Supply Designations.

Background: One of the biggest questions is how water usage is calculated for each application. The proposed rules lack clarity about how conservation measures are taken into consideration when calculating water usage for new subdivisions. A.R.S.§ 45-576 (H) requires the inclusion of any grey water systems in the calculation of usage when a municipality or private water company pursues a Designation of Assured Water Supply, but nothing in the proposed Adequacy Rules appears to provide for similar consideration. In the unincorporated areas of Coconino County, most subdivisions have water that is fairly expensive to begin with, due either to the costs associated with hauled water, or the depth to groundwater for wells, which creates some limits on high usage. We believe that consideration of regional conditions, and the inclusion of strict water conservation measures and requirements as part of a subdivision development, should be specifically addressed in the rules.

2. Issue: The current online Subdivision Demand Calculator is not user friendly.

Recommendation: Upgrade the online Subdivision Demand Calculator to include clear instructions for utilizing it without assistance from ADWR staff.

3. Issue: The final Hydrologic Criteria Report, which will serve as a Substantive Policy Guideline for ADWR, is not available for public review in conjunction with the agency's Adequacy Rules package. This is problematic since these Guidelines will direct ADWR staff actions when interpreting and applying the Adequacy Rules.

Recommendation: Delay submission of the final Adequacy Rules package to the Governor's Regulatory Review Council (GRRC) until the final Hydrologic Criteria Report is available for concurrent review.

Background: We understand that the final Hydrologic Criteria Report will be published before submission of the Draft Adequacy Rules to GRRC but because the content of the report could affect the public's understanding of the Rules, we request that ADWR publish the final report as soon as possible. We also request that the Hydrologic Criteria Report include an outline that will be clear and concise in describing the overall hydrologic review process.

4. Issue: The Draft Adequacy Rules do not address future phases of existing subdivisions. It is unclear in the rules, and in S.B. 1575 for that matter, whether all the projected water demand for a phased development would be required to demonstrate adequacy in the initial application. It is also unclear how the substantial investment exemption would apply under this scenario

Recommendation: Draft specific language in the Adequacy Rules describing how ADWR will treat an application for a water adequacy determination that contains only the demand and hydrologic information required for one or more phases of a multi-phase subdivision.

Background: Subdivisions are frequently phased, where a preliminary plat is approved for a large number of lots and final plats come in as lots are ready to be sold. Often it is many years between Unit 1 of a subdivision and the final unit.

5. Issue: It is unclear what is meant by the terms "area of impact," "study area," and "use" found in R12-15-716 (C)(3) and (F)(2).

Recommendation: Include definitions for these terms to ensure administrative consistency when reviewing applications for a water adequacy determination.

Background: In reviewing the provisions for demonstrating physical availability under R12-15-716, paragraphs (C)(3) and (F)(2) respectively, they refer to an analysis of how the proposed groundwater use will impact other existing uses in the area, and similarly, the impact of existing uses on the proposed demand. It is not clear how broadly the term "uses" is defined or how the area for consideration is defined. Paragraph F provides for considering anticipated demands in an adjoining jurisdiction in the same basin but not in a mandatory adequacy area, thus it is not clear how those demands are to be assessed by the Department.

6. Issue: Are Domestic Water Improvement Districts and Water Co-Operatives considered municipal water providers for the purposes of the Assured and Adequate Water Supply programs?

Recommendation: We support ADWR's proposal to amend R12-15-701 (49) in the Draft Groundwater Transportation Rules to make clear that the definition of a "Municipal Provider" includes Special Districts under Title 48, specifically Community Facilities Districts and Domestic Water Improvement Districts.

7. Issue: Municipal enactment of a hauled water exemption from the mandatory water adequacy program.

Background: We would like to confirm our understanding of the hauled water exemption provided in S.B. 1575. It is our understanding that this exemption was granted to cities, towns and counties in which the mandatory adequacy program applies and thus is not under the purview of ADWR and consequently not included in the agency's draft adequacy rules. Furthermore, if Coconino County adopts a hauled water exemption in conjunction with an adequacy ordinance, any subdivision that receives its water supply from a county approved

hauled water provider will be deemed by ADWR to have an inadequate water supply, nevertheless, the county will not be prohibited from issuing a final plat for the subdivision.

II. Hydrology

1. Issue: The process for determining the saturated thickness in the field is not clearly defined.

Recommendation: Establish procedures for determining saturated thickness where no data exists.

Background: Most developers and municipal water providers in Coconino County have chosen not to pursue a determination of adequacy under the current water adequacy program, primarily due to the current definition of adequacy relative to groundwater depths below 1200'. Coconino County appreciates the direction ADWR has taken with the new rules in addressing the different aquifer systems on the Coconino Plateau. The concept of "saturated thickness" seems to have merit and may be more appropriate for the hydrogeology of our area. However, we have concerns about how saturated thickness will be determined, and what this may require from a developer pursuing an adequacy determination.

2. Issue: Partial penetration of an aquifer or drilling through an aquifer.

Recommendation: Establish saturated thickness procedures for addressing those situations where wells are completed above and below the bottom of an aquifer.

Background: We can foresee that there could be occasions where wells are not completely drilled through the aquifer and where wells are completed for some distance beneath an aquifer. Are there specific borehole geophysical logs in conjunction with stratigraphic information that ADWR would prefer to see used to define water levels and the tops and bottoms of aquifers? If so, then will these be discussed in sufficient detail in the Substantive Policy Statement?

3. Issue: It is unclear which surface geophysical techniques ADWR will accept for the purpose of evaluating any hydrologic boundaries encountered during aquifer testing.

Recommendations: Add language to the Substantive Policy Statement to explain the relationship between boundaries that are encountered during aquifer tests and the likelihood that unless surface geophysics are run, the adequacy determination won't be approved. Add language in the Statement explaining which surface geophysical techniques are the most appropriate for evaluating the significance of any hydrologic boundaries encountered during aquifer testing.

Background: Although ADWR emphasizes that geophysics are not a required element of a physical availability demonstration, they are in the minds of the ADWR adequacy reviewers. Several surface geophysical techniques were listed in ADWR's report on hydrologic data and draft recommendations related to the review of 100-year physical availability criteria, yet only costs for one of the techniques (CSAMT) are provided and it isn't fairly emphasized that

multiple arrays at approximately $40,000 per array would likely need to be run to site a well. This adds up to a large sum of money and one is left wondering what else the reviewer will unofficially be expecting to see run. No geophysical technique can be guaranteed and they often raise as many questions as they might answer. For the record, CSAMT is not infallible, as has been demonstrated in a well drilled for Mayer and Pine/Strawberry. Rather than guessing whether ADWR can mandate surface geophysics or not (R12-15-716.F.3.d.iii), why not state that they likely will have a significant bearing on whether any adequacy determination in fracture controlled media is approved or disapproved?

4. Issue: Borehole geophysics.

Recommendation: Strongly recommend the use of certain minimum borehole geophysical logs in the Substantive Policy Statement.

Background: It is implied that borehole geophysics are not a required element of the physical demonstration and yet in areas of little or no data on saturated thickness and/or artesian thickness, they are the only means by which the saturated thicknesses and true tops and bottoms of aquifers can be determined. Why not highly recommend at a minimum the following logs: video camera, temperature, natural gamma and electric logs. This recommendation is based on real, hands on field experience and should give one the best information for the dollars spent. Once again, it must be emphasized that these techniques are not foolproof. In more than one case borehole zones identified as having multiple fractures yielded almost no groundwater flow to the well; whereas, single, small fractures elsewhere in the borings yielded most of the water.

5. Issue: The aquifer pump tests required in R12-15-716 (F) (3) are too expensive and too long, resulting in a waste of money and water given the limited amount of addition information to be obtained.

Recommendation: Replace the 7-day and 30-day aquifer test approach with a 24- to 40-hour stepped pumping test, followed by a recommended 7-day test that incorporates, at a minimum, a pumping rate that matches the rate needed to provide the total water volumes projected. Also, the rules should be more flexible to allow the pump tests on a case-by-case basis rather than based on an arbitrary mandatory timeframe.

Background: We agree with Payson's and Flagstaff's comments that one test procedure should be standardized. In the absence of any prior knowledge, one would have to approach the testing requirements with the worst case assumption that the duration of the test would be 30 days. A 24-hour stepped test to define the well's capacity followed by a 7-day pumping test and then a recovery test should be more than adequate for defining the aquifer parameters and making drawdown projections if things are put in the context of a 100-year period. A 7-day test represents 0.019% of 100-years and a 30-day test represents 0.082% of 100-years. Do we really think we have gained that much more critical information given the additional cost and waste of water? The City of Flagstaff spent $200,000 on just a 10-day aquifer test. What appears to be driving the 30-day pumping requirement is an underlying fear that ADWR only has one shot at the front end of the development process for making sure an applicant demonstrates adequacy (even phased programs will be limited in time as no developer is going to tie up large sums of

money where there is a high degree of uncertainty associated with proving up adequacy for the other phases of a development) and then ADWR has to live with their decision for the next 100 years. Other factors likely contributing to this perceived need for 30-day aquifer tests are limited knowledge on these types of aquifers and the fact that this program, unlike with the AMAs, provides for very little management of the aquifer system and the long-term monitoring data. Thus, one ends up with a program that focuses on a worst case scenario of finding as many boundaries as possible and draws conclusions with little to no regard to the uniqueness of artesian conditions, the significance of recharge in fracture systems, the true significance of water harvesting over time, and the importance of intermittent pumping strategies on the ultimate drawdown.

6. Issue: Need clarification about when numerical models will be required by ADWR and when analytical models will be accepted.

Recommendations: The Adequacy Rules and Substantive Policy Guidelines should provide flexibility in the model requirements for subdivisions with projected demands greater than 100 af/year. We recommend either leaving it to be determined on a case-by-case basis, noting what may trigger the numerical model, or alternatively, increase the threshold to 150 af/year. ADWR should also provide a "model" analytical model for developers to use as a template.

Background: According to ADWR staff, they are considering changing the 100 af/year criteria to allow analytical models in some cases where the annual demand is greater than the 100 af/year. This wording needs to be included in the revised rules before sending them to the GRRC.

7. Issue: Need a "model" numerical model and more clarity on model parameters.

Recommendation: Provide a "model" numerical model for developers to use as a template. Provide additional information and guidelines addressing how to meet the requirements envisioned for the final Substantive Policy Statement.

Background: The Draft Adequacy Rules and Substantive Policy Statement currently contain very little guidance concerning how one is to satisfactorily arrive at the appropriate grid size, cell size, number of layers, how the model may be nested within a regional numerical model, etc. On the one hand, we are told that whatever is considered acceptable industry modeling practices will define what and how the modeling needs to be done. On the other hand, it is noted that there are many grey areas with any modeling study and that all studies may be somewhat unique. Given any five hydrologists and/or groundwater engineers, we believe one would get at least four different opinions as to what constitutes standard modeling practices.

8. Issue: Account for recharge in analytical modeling.

Recommendation: Provide an allowance for recharge that could be accomplished in situations where analytical modeling is allowed to be used for determining the final 100-year drawdown.

Background: Section E.11 of the Substantive Policy Statement lists aquifer recharge as one of the items to be discussed in characterizing and evaluating an aquifer. The section additionally requires a map illustrating recharge areas and a conceptual water budget that would include recharge as one of the key parameters. Since the applicant is already being required to evaluate and discuss recharge, is there no other mechanism than a quite expensive numerical model by which recharge could qualitatively be accounted for? If a recharge range could be estimated on an annual basis (same aerial mapping of very specific recharge zones as would be used for a numerical model), then an annual volume and an average daily volume could be calculated using the lower end of the potential recharge range. This average daily volume could be subtracted from the proposed daily pumping volume to arrive at a revised pumping rate for the development that at least considers the positive effects of recharge on projected drawdowns. This would not be a very large number and given all the other limitations of an analytical model, would not be introducing a gross error.

9. Issue: The Coconino Plateau currently lacks a regional groundwater flow model with which to start the program.

Recommendation: While waiting for the completion and publishing of the USGS regional model, offer other models for northern Arizona to help developers.

Background: In material prepared by ADWR, it is acknowledged that there is not a lot of information available, and thus, it will be incumbent upon developers to do substantial studies as a starting point. There is some hope that the USGS regional groundwater flow model will be accepted as a tool, but since it is still being developed, we understand it is not a certainty at this time.

10. Issue: There is no clear-cut method for a developer to estimate the costs associated with proving an adequate water supply early in their planning and decision-making process.

Recommendations: Make the changes recommended above including improving the Online Demand Calculator and including specific provisions for regional conditions and conservation measures in the Substantive Policy Statement. Clearly state that production wells can be used for monitoring wells.

Background: We understand that part of the review and approval process for proposed rules involves an evaluation of costs and benefits associated with the rules. There are significant costs associated with the proposed rules and it is still unclear to us how a developer could estimate early on in their decision-making process an approximate amount for proving adequacy. The majority of the costs will be related to the hydrological issues, some of which we have commented on above.

11. Issue: The costs associated with proving water adequacy in an existing service area could be onerous for one subdivider who may end up having to prove adequacy for the existing system.

Recommendation: None.

Background: For developments that would be served by an existing system that does not have an adequacy designation (e.g. Doney Park Water, Kachina Village Improvement District, Flagstaff Ranch Water Company, or City of Williams) we understand that it is the developer and not the system operator who has the responsibility of demonstrating adequacy. While we have been assured that this would not require the developer to prove the whole system, we find it likely that the costs associated with making this determination could be borne by the subdivider. For example, if a subdivider was proposing to utilize existing infrastructure, this would require a demonstration of adequacy for wells that already exist and the water demand associated with those wells.

12. Issue: Lack of specifics regarding ADWR's hydrologic study assistance for small subdivisions.

Recommendation: Include additional information in the Draft Rules about the scope of the initial analysis that will be done by ADWR for subdivisions with 30 lots or less.

Background: We acknowledge that ADWR has agreed to do a preliminary review of the physical availability of water for subdivisions of 30 lots or less in mandatory adequacy areas, but it is not clear exactly what this will amount to. The parameters for this should be clearly stated in the rules.

13. Issue: Is a one-hour well test sufficient to determine whether the water supply it produces will meet the relevant elements of the mandatory water adequacy program?

Background: A local utility director testified at a recent County Work Study Session on the Draft Adequacy Rules that in more than 99% of the cases, a one hour well test is sufficient to determine a test well's productivity. Consequently, longer well tests were unnecessary. Is this correct?

III. Statutory Changes

1. Issue: The statutory exemption for subdivisions which will be supplied by a water project that is currently under construction and will be completed within 20 years does not include sufficient criteria to ensure that an adequate supply would be in place at the end of 20 years, and no penalty if it is not.

Recommendation: We support legislation that would impose additional criteria in A.R.S. § 45-108.03 designed to reduce the risk that the project, once completed, would lack sufficient supplies to meet the 100-year adequacy requirement. Further amend A.R.S. § 45-108.03 to penalize a subdivider if the project is not completed within 20 years.

2. Issue: The mandatory adequacy program lacks an on-going water management program like those found in the Active Management Areas.

Recommendation: We support legislation that would authorize ADWR to develop long-term management plans for communities that adopt the mandatory adequacy program.

Background: A long-term groundwater level monitoring program can ultimately be the most important step in the water adequacy program. Regardless of how many pump tests or what pumping durations are run up front, the future groundwater level monitoring has the most significance in terms of 100-year adequacy because it is in essence a comprehensive aquifer test that integrates the true effects of any boundaries, accounts for recharge and intermittent pumping strategies, and shows the real importance of all water conservation measures including water harvesting. Unfortunately, the way the adequacy program is currently structured, none of this long-term data will have any bearing on the water adequacy decision because everything is based on information obtained up-front, except phased subdivisions. Even in those cases, all decisions will have been made early on in the context of a 100-year period. Sadly, there is no long-term management program proposed outside the AMAs in terms of defined intervals at which long-term monitoring data are integrated into a model and compared against all current and future drawdown projections.

3. Issue: Need for model updating and maintenance by ADWR.

Recommendation: We support a legislative appropriation to provide funding for regular model updates and maintenance. Funding could be shared with the USGS or a local partnering agency, if necessary.

Background: As the program is structured now, there is no defined plan for overseeing, further developing, and upgrading a regional model that all the individual modeling studies would become part of. In addition, there is nothing in place to define when and why any model recalibration would be done. We see this as a major deficiency in the adequacy program. A regional model needs to be finished and agreed upon, and then someone must oversee the maintenance of the model. Individual nested subdivision models and long-term water level monitoring data need to be incorporated in a timely manner, calibration criteria would need to be defined, and recalibration needs to be performed when calibration criteria dictate. We understand that ADWR has no intentions currently to pursue any regional modeling. As such, we recommend that another agency such as the USGS needs to be involved and funded via the program to provide this function.

4. Issue: A comprehensive program is needed to address the environmental needs within a watershed.

Recommendation: We support the adoption of legislation that recognizes the needs of the environment as an important part of any water management regime.

Background: Coconino County, through its Conservation Based Comprehensive Plan, and its leadership role in the Coconino Plateau Water Advisory Council, supports water resource

planning and management that considers the needs of both humans and the environment. The Water Resource Element of the Coconino County Comprehensive Plan recognizes that "water supplies are not only essential for human life, but also for healthy ecosystems and habitats." The Coconino Plateau Water Advisory Council has a stated goal "to ensure that an adequate long-term supply of water is available to meet the current and future reasonable needs while preserving the health of the environment on the Coconino Plateau." Furthermore, the potential impact of water withdrawal in sensitive areas has long been a concern associated with development in Coconino County. This was most recently reflected in the proposed Canyon Forest Village development near the South Rim of the Grand Canyon. The protection of seeps and springs in the Canyon is of concern to many interests including Native Americans, the National Park Service, wildlife resource experts, scientists, outdoor recreationists, environmentalists, and the general public. Similar concerns have been raised regarding impact of development on flows in other areas of the County, including Oak Creek.